What is claimed is:

1. An apparatus comprising:

a substrate;

a waveguide mounted on the substrate;

an optoelectronic chip having electrically conductive contacts coupled to the substrate via a metallic solder; and

an optical element located on the optoelectronic chip and coupled to the waveguide via an optical solder which protects the optical element during a metallic soldering of the optoelectronic chip to the substrate.

2. An apparatus as defined in claim 1, wherein the optoelectronic chip is a flip-chip.

3. An apparatus as defined in claim 1, wherein the optical element comprises a transceiver, a receiver or a transmitter.

4. An apparatus as defined in claim 1, wherein the optical solder is at least one of a polymer optical solder, an optically transparent adhesive at a predefined wavelength, a dispensable material, a thixotropic material and a low modulus material.

5. An apparatus as defined in claim 1, wherein a refraction index of the optical solder approximately matches a refraction index of the waveguide and a refraction index of the optical element.

6. An apparatus as defined in claim 1, further comprising an underfill material disposed between the optoelectronic chip and the substrate.

7. An apparatus as defined in claim 6, wherein the underfill material is not disposed between the optical element and the waveguide.

8. An apparatus as defined in claim 1, wherein the waveguide includes a mirror.

9. An apparatus as defined in claim 8, wherein the mirror is a metallized mirror.

10. An apparatus as defined in claim 1, wherein the waveguide is a planar waveguide.

11. An apparatus as defined in claim 1, wherein the optical solder protects the optical element from being contaminated by flux residue during the metallic soldering and from being damaged during defluxing.

12. An apparatus comprising:

a substrate;

a flip-chip having an optically active area;

a waveguide at least partially disposed between the substrate and the flip-chip;

electrically conductive contacts located on the flip-chip and coupled to the substrate via a metallic solder; and

an optical solder bonding the optically active area of the flip-chip to the waveguide via an optical solder which protects the optically active area during metallic soldering of the optoelectronic chip to the substrate.

13. An apparatus as defined in claim 12, wherein the optical solder has a thermal curing temperature substantially equal to a melting temperature of the metallic solder.

14. An apparatus as defined in claim 12, wherein the optical solder is at least one of a polymer optical solder, an optically transparent adhesive at a predefined wavelength, a dispensable material, a thixotropic material and a low modulus material.

15. An apparatus as defined in claim 12, wherein the optical solder covers the optically active area.

16. An apparatus as defined in claim 12, wherein when cured, the optical solder forms an optical solder joint between the flip-chip and the waveguide.

17. An apparatus as defined in claim 12, wherein facing surfaces of the flip-chip and the substrate are electrically connected.

18. A method of mounting a flip-chip to a substrate comprising:

attaching a waveguide to the substrate;

dispensing an optical solder onto the waveguide;

aligning the flip-chip at least partially on the substrate and at least partially on the optical solder; and

soldering the flip-chip to the waveguide and the substrate simultaneously such that the optical solder couples an optically active area of the flip-chip to the waveguide and solder bumps couple the flip-chip to the substrate.

19. A method as defined in claim 18, further comprising dispensing flux on the substrate.

20. A method of manufacturing as defined in claim 19, further comprising defluxing at least one of the substrate, the flip-chip and the waveguide.

21. A method as defined in claim 18, wherein soldering the flip-chip to the substrate comprises capturing the optical solder between the flip-chip and the waveguide.

22. A method as defined in claim 18, wherein soldering the flip-chip to the substrate comprises forming an optical solder joint between the flip-chip and the waveguide..

23. A method as defined in claim 18, wherein soldering the flip-chip to the substrate comprises snap thermal curing the optical solder.

24. A method as defined in claim 18, wherein soldering the flip-chip to the substrate comprises electrically connecting the flip-chip and the substrate.

25. A method as defined in claim 18, wherein soldering the flip-chip to the waveguide and the substrate comprises optically connecting the die to the waveguide and electrically connecting the flip-chip to the substrate simultaneously.

26. A method as defined in claim 18, further comprising disposing an underfill material between the flip-chip and the substrate.

27. A method as defined in claim 26, wherein the optical solder prevents the underfill material from entering between the optically active area of the flip-chip and the waveguide.

28. A method as defined in claim 18, further comprising aligning and placing the flip-chip at least partially on the substrate and at least partially on the optical solder using a pick and place machine.

29. A method as defined in claim 18, wherein soldering the flip-chip and the waveguide comprises covering the optically active area of the flip-chip with the optical solder.

30. A method as defined in claim 18, wherein the refraction indices of the optically active area, the optical solder and the waveguide substantially match.

31. A method as defined in claim 18, wherein soldering the flip-chip to the waveguide and the substrate simultaneously comprises solder self-aligning the flip-chip with the waveguide and the substrate.